

Architectural drawing and education

Principles to the evaluation of the historic plan collection at Budapest University of Technology and Economics

**János Krähling – Balázs Halmos – Katalin Maróty – István Sajtos*
– Zorán Vukoszávlyev – Eszter Baku – Anna Józsa – Zsuzsanna Kiss – Krisztina Fehér – Gergő Kovács**

BUTE Department of History of Architecture and of Monuments, Budapest

BUTE Department of Mechanics, Materials and Structures, Budapest *

The Department of History of Architecture at the Faculty of Architecture of BUTE owns a remarkable plan collection that has been established in the period from about the 1860's to the present. Plans created in university education are of special importance – they give a general idea of architecture as a creative activity along with its complex background of art and science. Education of architects initially emphasized the copying and surveying of buildings which gradually developed through specialised design tasks to the creation of new values. The main focus of the research is to follow and evaluate this change of approach, by extending the scope of the investigations beyond the department's collections. By charting and analysing the remained stock of historical drawings, sample books and photos in the period from the mid 19th till the mid 20th century, as well as assessing former publications and databases, this project hopes to give an overview of the role and importance of drawings in the history of architectural education. This paper aims at establishing and highlighting the main criteria and principles for the assessment of the plan material, defining also the methodology for its processing

Keywords: architectural drawing, architecture education, architectural design, architectural survey, building archaeology

1. Schematic presentation of the formation of the drawing collection

Plan drawing has been from the age of Early Modern the main means of expression of architectural thinking, and consequently the most important medium of modern architectural education. This thesis up to now relevant has been formulated by Leon Battista Alberti, the most important theorist of the Quattrocento.

One of the main aims of architectural education has always been to teach students to express their ideas in drawings. It is the summary of knowledge of the architect gained in arts, technical science and the humanities during his education. The research of architectural drawings has major international research literature. The first known drawings collections and the beginnings of architectural survey – as contributions to the design - can be dated back also to the Age of the Renaissance (1). This is also the period from which major technical documentations of buildings remained. The occurrence of architectural drawings in greater numbers is known in Hungarian architectural history after the time of the deliberation from the Ottoman rule in the 18th century, and became more and more important also in the education and daily practice of architecture (2). The absolutist state administration's system has standardized technical drawings and teaching in the 18th century drawing schools essentially followed this principle. The typical 18th century architectural institution, the guild system commissioned separate Sunday drawing schools for the teaching of architectural drawings. The academic curricula in engineering, mathematics and geometry also involved education of architectural drawings, which - after the launch of university architectural education - has become one of the major groups of subjects.

After the beginning of university education at the Technical University of Budapest in 1871 – as the first institute in Europe to train engineers at university level - the Faculty of Architecture became the top institution of architectural education in Hungary (3). Studies in the morphology of history of architecture and free hand drawing taught by the history of architecture department(s) became also the base of design drawing (4). The main artistic documents of the education activities of the faculty are the students' and professors' plan drawings, of which only a few have survived. Most of the remaining plan drawings came from the former three architectural departments that had been later united into one unit after WW2. The number of these remaining documents is also fragmentary and show adventurous stories. The present Department of History of Architecture which has been the heir of the three former units inherited – if in an incomplete state – the drawing collection of the former history departments (5). After the change of the political system, in 1990 dr. Alice Horvath has started the processing of this vast collection. The results of her work was the exhibition of some selected works of prominent professors of the departments (Steindl, Schulek and others) related to national scientific conferences mainly on occasion of their anniversaries (6). Later, the department's leadership – due to the lack of adequate staff, a shortage of storage capacity and in the hope of proper disposal in a public collection - decided to pass the drawings to the National Office of Monument Preservation. The drawings were placed there in 1998, however, without cataloguing and scientific analysis. Initiatives have been carried out to record of the collection but without success. After the reorganization of the institutions and agencies of heritage preservation the remains of the unprocessed plan

(1) Lever, Jill – Richardson, Margaret: *The Art of the Architect. Treasures from the RIBA's Collections*. Trefoil, London 1984.

(2) Bibó István: A magyar építészeti szakirodalom kezdetei (Építészeti szakkönyvek Magyarországon a 18. században). In: Zádor Anna (szerk.): *Művészet és felvilágosodás*. Akadémiai Kiadó, Budapest 1978. 27-122.; and: N. Dávid Ildikó: A kolozsvári egyetem építészeti oktatása a XVIII. század végén. In: Zádor Anna (szerk.): *Művészet és felvilágosodás*. Akadémiai Kiadó, Budapest 1978. 301-351.

(3) Szabó I. (Chairman of the ed. board): 200 Years of the Technical University of Budapest. *Periodica Polytechnica* Vol. 26. Special Issue, 1982.

(4) Szentkirályi Zoltán: Adatok a magyar építész-képzés történetéhez. *Építés-Építészettudomány* 3 (1972) 4. 439-465.

(5) Szentkirályi Zoltán: Die Geschichte des Instituts. *Periodica Polytechnica Architecture* Vol. 21. (1977) 3-4. 103-106.

(6) Horváth Alice (szerk.): *Steindl Imre (1839-1902) építész, műegyetemi tanár emlékezete*. (Konferencia kiadványok 2.) BME Építészettörténeti és Elméleti Intézet 1989.

collection were returned to the Department of History of Architecture and of Monuments of BUTE. The department – the donator and the subject of this research project – shall be the scientific umbrella-institution and supervisor of this collection of national interest. The maintenance, storage and handling of these historical documents shall be realised with the involvement of the central library and technical information centre of the university, BME OMIKK.

The collection in its unprocessed state contains several thousands of drawings from 1870 to the present. It is one of the most spectacular relics of architectural education on university level in Hungary and also an important source to the research of Hungarian architectural Heritage. Among the authors of the student drawings, student designs, building surveys carried out with professors and professors' own projects the most significant architects of Hungary are represented. Some of the names to be mentioned: Ferenc Schulcz, Imre Steindl, Frigyes. Schulek, Gyula Wälder, Dezső Hüttl, Jenő Kismarthy-Lechner, Károly Csányi, István Möller, Iván Kotsis, Jenő Rados, Loránd Friedrich, Gyula Hajnóczy, Máté Major, György Kardos, Imre Makovecz, József Finta. Other plan drawings of different disciplines can be found sporadically in other departments of the faculty of architecture, especially in the Department of Materials and Structures and that of Building Constructions, as well as in the Department of Architectural Representation; artistic freehand drawings and water-colour drawings survived in the Department of Design but not in a greater extent.

2. Preliminary researches

Besides the above mentioned research initiatives lead by A. Horváth, the Department of History of Architecture has lead also researches for determining the roles of the pattern books and the artistic invention in design (7).

Similar research studies in Hungarian architectural history research have been focusing on other approaches of the research theme. István Bibó's outline on the beginnings of architectural publications in Hungary gives an essential introduction into the topic (8).

The drawing material offers also basic data to the beginnings of the Hungarian monument preservation institutions (9). A major personality in the history of design education in Hungary was the internationally renowned professor Iván Kotsis, who first established the modern Hungarian architectural training system at university level (10). Some drawings from his legacy have been preserved in the Department of Residential Design. From the drawing collections referring to architectural education the plan collection of historical surveys of the former Állami Felső Építő Ipariskola (State High School of Building Industries - later Miklós Ybl Technical College) which appeared in a reprint volume recently is of greater importance (11). (Figure 1.)

(7) Marótyz Katalin: Mintakövetés és invenció a XIX. század második felének Budapesti építészetében. *Építés-Építészettudomány* 33. (2005) 1-2. 27-44.; MARÓTYZ Katalin: Wéber Antal könyvtára – adalék a XIX. századi magyar építészeti szakirodalom kutatásához. *Építés-Építészettudomány* 34 (2006) 1-2. 87-112.; and: Krähling János: *Architectural teaching methods in Budapest in the 30's* (Konferencia előadás) "La formazione dell' architetto nella seconda Réunion Internationale d'Architectes (Milano 1933) e nell' attuale processo di unificazione europea". Milano, 1998.

(8) Bibó op.cit.

(9) Császár László (szerk.): *A műemlékvédelem Magyarországon*. Képzőművészeti Kiadó, Budapest 1983.; Dercsényi Dezső: *Mai magyar műemlékvédelem*. Magvető, Budapest 1980.; and: Marosi Ernő: *Die Ungarische Kunstgeschichte und die Wiener Schule 1846-1930*. Collegium Hungaricum, Wien 1983.

(10) Kotsis Iván: *Írások, házak, tanítványok*. (Szerk.: Perényi Tamás) BME Lakóépítélettervezési Tanszék.; see: Krähling János: Kotsis Iván (1889-1980) – az építészettörténész. In: *Akadémiai Műhely. Emlékbeszéd az MTA elhunyt tagjai felett 1998*. Magyar Tudományos Akadémia, Budapest 1999. 7-13.

(11) Foerk Ernő (szerk.): *A Magyar Királyi Állami Felső Építő Ipariskola Szünidei Felvételei 1912-1942*. Reprint. Terc Kiadó, Budapest 2002.

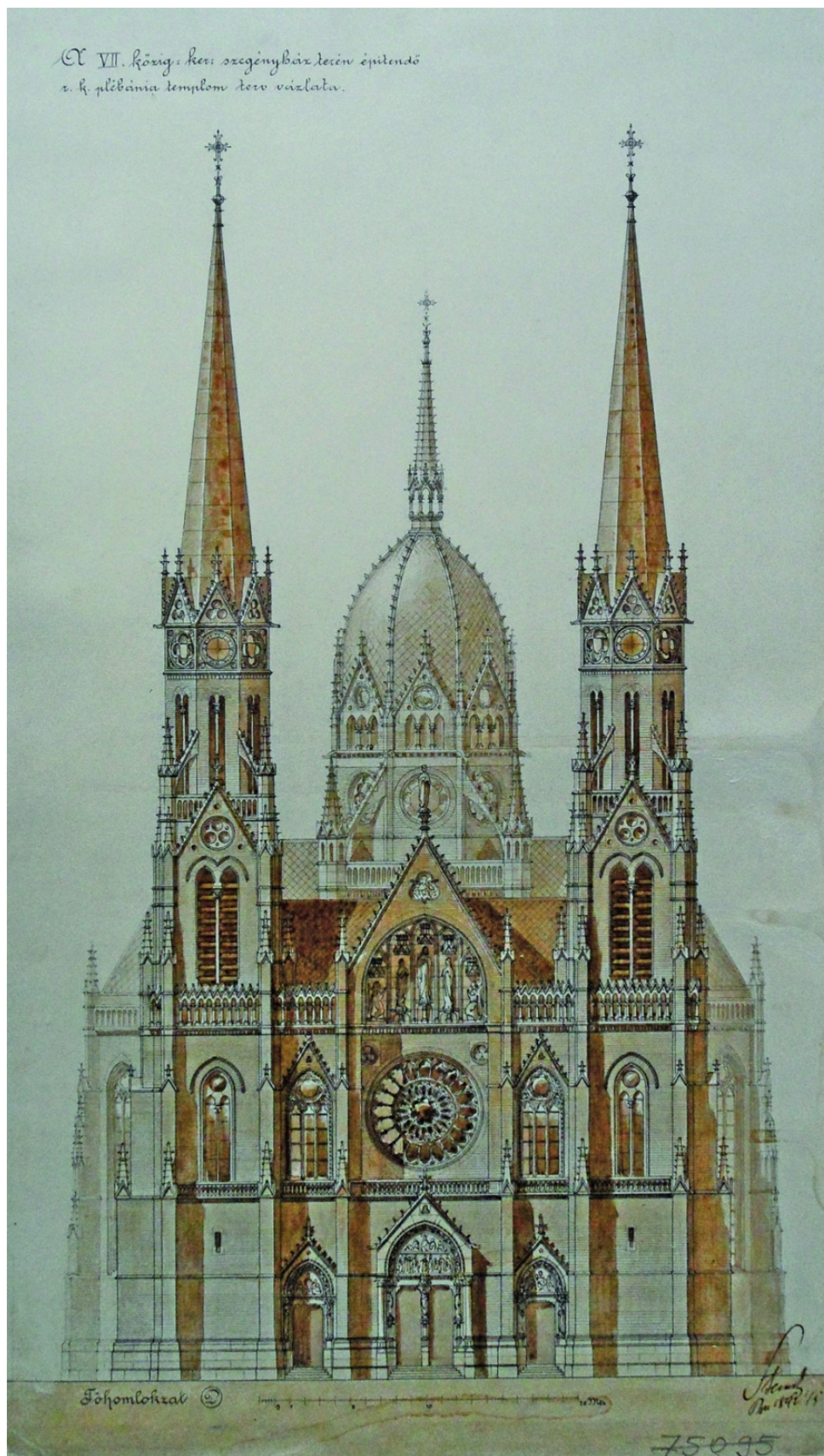


Figure 1. Imre Steindl's sketch design to the parish church of Erzsébetváros district in Budapest (today Rózsák tere) 1892. Plan collection of the Department of History of Architecture No. 101121.

3. Research hypotheses

The main guideline of the research goes along the methodological aspect of the education by which the methods first based on model drawings and monument surveys have been followed by design in historic styles and then focusing on the aesthetic aspect of new space formation; the end of this process leading to the complex design involving constructional design as well.

Following this general approach, the hypothesis of the research is the assumption that besides the "institutional" architectural history textbooks, design handbooks and manuals taught by the professors there were similarly important sources of ideas that influenced architectural thinking appearing in the channels of international and national conferences, journals, galleries and exhibitions, the actual tendencies of fashion and the adapted techniques of architectural graphics. The elaborate answers for these hypothetical questions will highlight architecture embedded in the theory and science exploring its own history of theory.

3.1 Theory and pattern books for architecture students in the 19th century

The early form of architecture drawing instruction has based upon the process of copying figures of different pattern books of architecture. The determining source of these books in Hungary was mainly of German origin. This is especially evident concerning the literature of the 18th and the early 19th centuries, as I. Bibó has researched (12). There is a definite tendency that more and more modifications compared to the original pattern appear and the content of the plans tend to show more structure-based representations of the buildings as sections and constructional details. (Figure 2.)

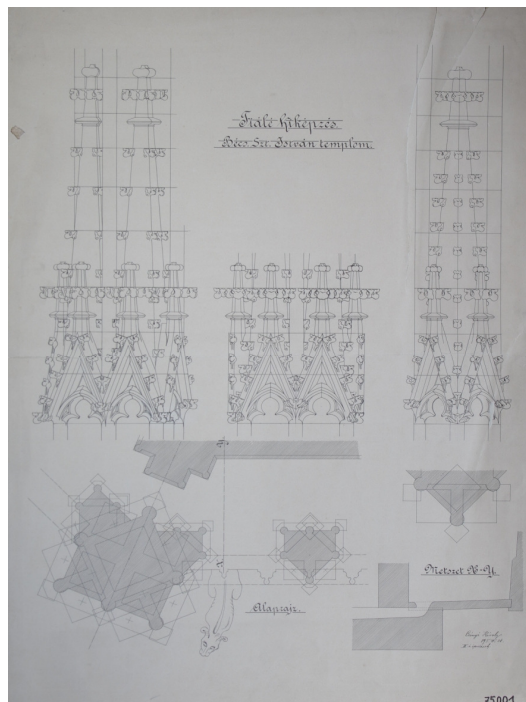


Figure 2. Spire detail of the The Church of St. Stephen, Vienna. Drawing of Károly Csányi, III. year student;24. 04. 1895. Source: Plan collection of the Department of History of Architecture No. 102345.

Medieval architecture as the most important aesthetic approach of the period of the 1860' has been taught on the plan collection edited and published by the periodical of the "Keiserliche und Königliche Central-Comission zur Erforschung und Erhaltung der Baudenkmale". This Vienna-based office had been founded in 1853 and from 1856 on its

(12) Bibó op.cit.

periodical published also historic buildings (mainly churches) of Hungary. Its publications served as the main basis of architectural education by the beginning of the Faculty of Architecture. Bibó's researches did not extend the scope of researches on architectural theory sources up to the second part of the 19th century. One of the key issues of this research is to explore and to analyse the most important pieces of this period.

3.2. The role of monument survey in the teaching of architecture

Monument survey has been playing always an important role in the education of architects. The plan collection of the Department of History of Architecture and of Monuments contains also survey plans of important and high-ranked monuments. These drawings are of great value and importance as they belong also to the history of the early establishment of institutions of monument preservation in Hungary.

Architectural surveys made by the students contributed also to the nation-wide need to explore and evaluate important historic monuments of the country, at that time mainly medieval churches. They were commissioned by the Múemlékek Ideiglenes Bizottsága /Interim Committee for Historic Monuments/ which functioned between 1872 and 1881. The professors Imre Steindl and Frigyes Schulek were also members of that committee. (Figure 3.)

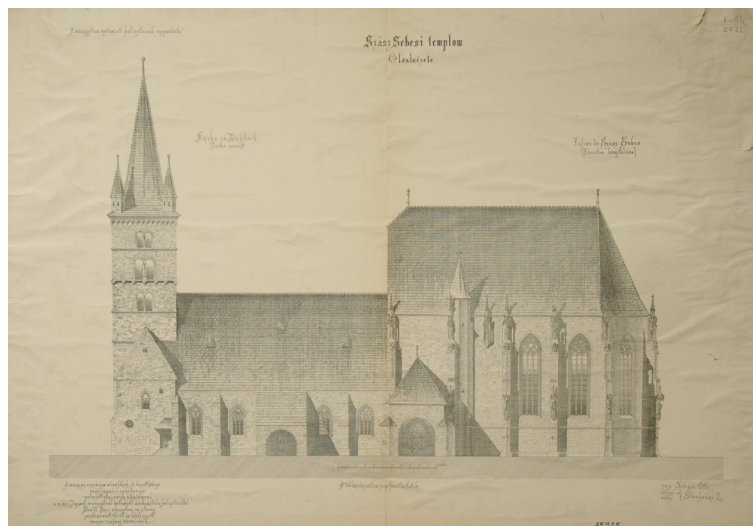


Figure 3. The Church in Szászsebes/Mühlbach/Sebeș (Transylvania, today Romania). Survey of the students of architecture lead and supervised by professor Imre Steindl. Before 1881. Source: Plan collection of the Department of History of Architecture No. 102547.

3.3. The contribution of the tasks of design in historic styles to the training in design at the end of the 19th century

The conception of design education was in close relation to drawing after pattern books. The main source of design in the early period of the Faculty had been basing on the publications of the above mentioned Central-Commission. The edition of the wide ranging book series Handbook of Architecture (Handbuch der Architektur) triggered a basic turn in the theory and practice in design education in the last decades of the 19th century.

The new approach of this great series was the coherent treatment of the different disciplines as history of architecture, contemporary building typology as a science and the construction involving historic and contemporary examples on equal basis. This new approach dealing the historic architectural heritage coherently with the actual problems of design resulted a definite change also in the tendency of education. The general principle of education was to explore historic and contemporary architecture on the same basis of terms and notions thus forming the most important theory base of historicist architecture. A more thorough research and study on the use of pattern books would shed light on the important sources of architectural education. (Figure 4.)



Figure 4. Diploma project of student Gyula Wälder - signed by prof. A. Hauszmann.. Source: Plan collection of the Department of History of Architecture No. 101008.

3.4. The development of the subject of design in the first part of the 20th century

The major changes in architecture in the beginning of the 20th century can be in general terms characterized by the need of finding a new language other than historic styles and equally representing the new and truly presented structures. As the nature of the education on the Faculty of Architecture was rather conservative determined by his professors, it is a crucial question how this conservative manner basing on historic knowledge developed to a more function-oriented and structurally more conscious design process. The key professor of this development was Iván Kotsis, who – leaving later the department of history has established the first really modern design department (Dept. of Residential Building Design) of Hungary conform to the main tendencies of European architectural education. The plan collection consists of some original drawings of Kotsis and also of his students'. Their analysis and evaluation may lead to a deeper understanding of the issue. (Figure 5.)

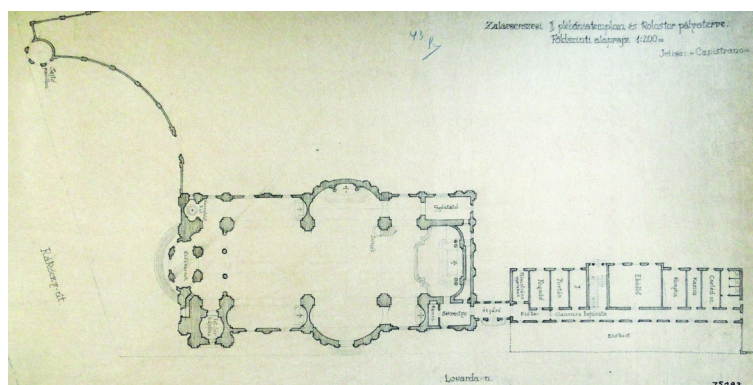


Figure 5. The parish church in Zalaegerszeg. Project competition plan. by Iván Kotsis. Source: Plan collection of the Department of History of Architecture No. 100990.

3.5. The relation of Hungarian architecture education to its international context

The plan collection consists of several drawings which have been exhibited on the international congress of architects held in Budapest in 1930. This event definitely has displayed the modernist tendencies of Hungarian architecture design education.

The full amount of drawings is not known (a lot of them presumably have been destroyed; some items might appear in other collections). An analysis will be carried out to explore the principles, the main aims and the relation of Hungarian architecture education to its trans-national context. (Figure 6.)

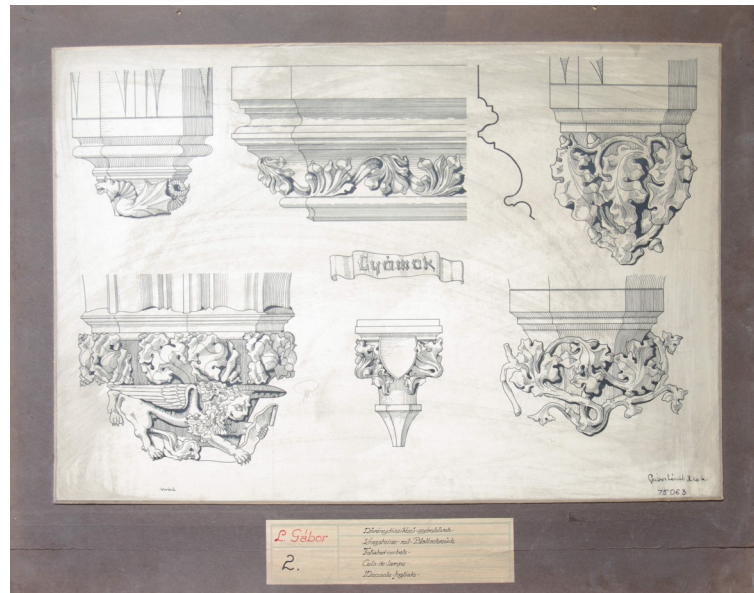


Figure 6. Foliated corbels [of Vajdahunyad castle?]. Drawing of László Gábor, II. year student; presented at the international exhibition in 01.04.1930. Source: Plan collection of the Department of History of Architecture No. 103262.

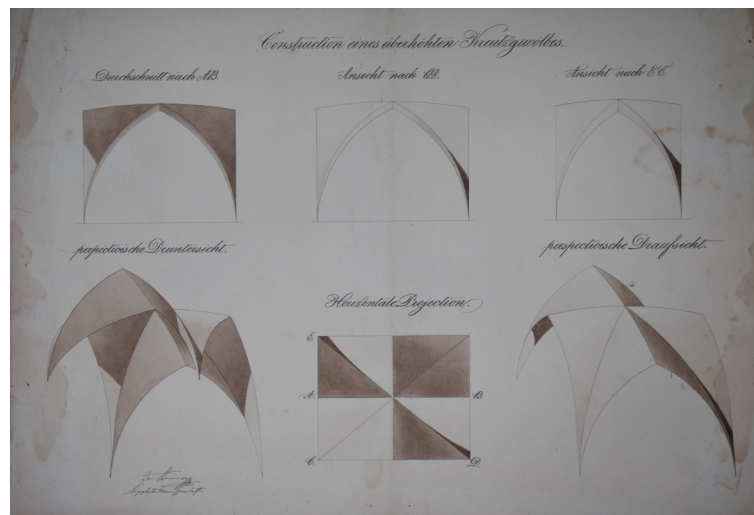


Figure 7. The morphology of vaults. Drawing from the 1870's (?). Source: Plan collection of the Department of History of Architecture No. 103143.

3.6. The role of structural education and it's reflection in architectural drawings

The design of structures realizing new concepts other than of the compulsory patterns appear also gradually in the education of architecture. The professors of BUTE (mainly of the Faculty of Civil Engineering) played an important role in the development of design of

structures (e.g. Zielinsky, Kherndl, Mihailich, Kazinczy, later P. Csonka and others). The analysis of the drawings to be researched offer a not yet elaborated approach of how this aspect of design developed from the usage of pattern books to real new conceptions attached to the architectural principles. (Figure 7.)

3.7. The relation of architectural designs of the professors to the main tendencies of education

The plan collection consists of a big number of original drawings of the professors never researched, analysed and published (just to mention key architectural designs of Imre Steindl, Alajos Hauszmann, Frigyes Schulek, Gyula Wälder, Jenő Kismarty-Lechner, Iván Kotsis, István Möller, Jenő Rados, Loránd Friedrich). The analysis of this drawings will not only put the question on the relation between education and own architectural practice but to offer a basic research contribution to the architecture of the period between the Compromise (1867) and WW2. (Figure 8.)

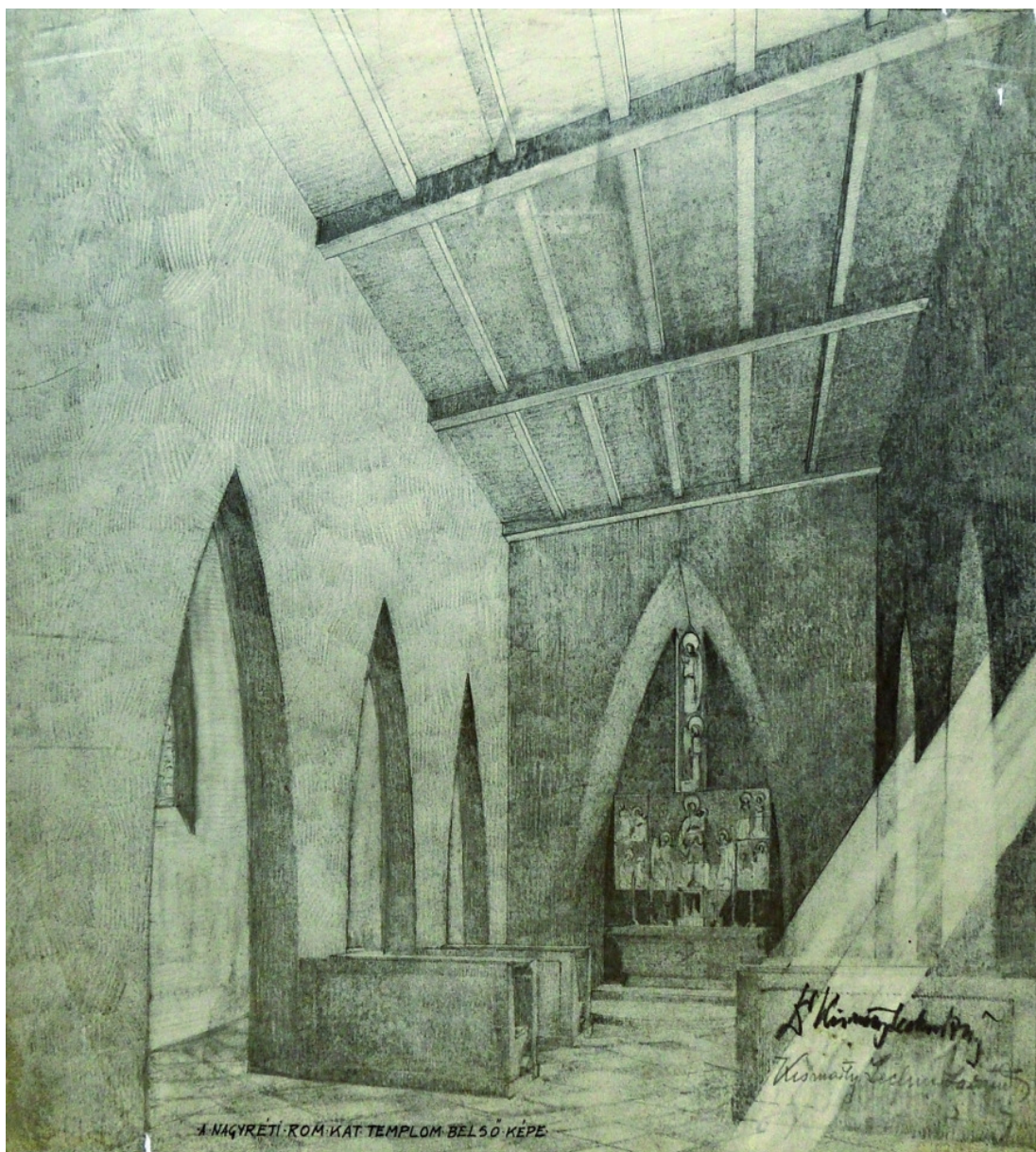


Figure 8. Jenő Kismarty-Lechner: Design of a parish church in Nagyrét, 1930s. Source: Plan collection of the Department of History of Architecture No. 101703.

3.8. The role of photography in the education of architectural history

As a big part of the plan collection, the historical photos are also of great importance. On the one hand, photography both as slides or as prints were used for the visualisation of the lectures, and on the other hand, they represented the source material for the morphology studies of historic architecture. A considerable number of the photos of the collection are of high value that serve also as primary source in building history researches. An important aspect of the planned research is to catalogue and to analyse them. (Figure 9.)



Figure 9. Detail of the Great Sphinx partly under the sand, late 19th C. Source: Plan collection of the Department of History of Architecture No. 800206. (Detail)

4. The methodology of the project

The necessary research methodology of the projected investigations shall be basically archive oriented, where the establishment or extension of the archive is also part of the activities.

A previous pilot project supported by the Hungarian Academy of Arts (grant No. 1573-MMA-13-KUT.) has been realised to elaborate and building up the metadata structure of the collection and to record about 2000 drawings. In this recording process no scientific analysis has been carried out to evaluate their content. In this project, the cataloguing of about 4000 drawings and the evaluation will be realised along the above mentioned tasks and hypotheses.

Following this principle, the first level of the activities shall be carried out by students, PhD student(s) and researchers, having experience on the field of historic plan analysis to carry out the attribution of the drawing items. The record of the content of the collection through trained staff is of primary importance because of the problems of identification and record of anonymous drawings.

The second level of the activities will be the analysis of the plan collection in team work of researchers and the database providers. The basic research questions previously determined can be refined according to this analysis. In parallel, a repertory will be established collecting data about plan collections of public institutions having students' drawings of the researched period. A colleague of the former Miklós Ybl Technical College (and before: Állami Felső Építő Ipariskola/High School of Building Industries) will be involved to explore the possible parallels of the former educational institution mainly responsible for master builders' and building contractors' education. Research in the big

design collections of public archives are also planned, especially in the biggest national plan archive of the former National Office of Cultural Heritage.

The third level of activities will be the scientific evaluation of the researched material followed by the publication of the results.

5. Conclusion

Architectural drawing has always been the most important media to express a creative concept. The Faculty of Architecture at Budapest University of Technology and Economics is the leading institution of architectural education in Hungary, and it had been the only one on academic level for more than one and a half centuries. This volume of mainly unprocessed drawings are the most spectacular relics of the history of the Department as well as the history of training architects in Hungary in general. In our investigations we aim at elaborating this material and cataloguing the fragments of similar architectural drawing collections available in different institutions, following a scientific analysis of the topic. The focus of the research is on the era between the 1870's and the mid 20th century. Examining the drawn heritage of architectural education it may shed light on the scientific and theoretical background of architecture. The works by students, by professors playing a leading role in important planning tasks of their time – Imre Steindl, Alajos Hauszmann, Frigyes Schulek, Gyula Wälde, Jenő Kismarty-Lechner, Iván Kotsis and Loránd Friedrich among others – tell the story of development in theory and practice, and represent a gradual differentiation of historical architecture and contemporary design. The research elaborates the metamorphosis of the scientific and theoretic base of architecture as creation of art and as a technological planning process. Analysis of building surveys, competition entries and executed plans serve as an important basic research on the history of Hungarian architecture.

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